

STRIP SEALS

(10-12-01)

1.0 GENERAL

This Special Provision consists of furnishing and installing strip seal expansion joints as shown on the contract drawings and in accordance with this Special Provision, the Standard Specifications and the manufacturer's recommendation. All materials, labor, equipment, and incidentals necessary for the proper installation of the strip seal expansion joints are included.

2.0 MATERIALS

Use AASHTO M270 Grade 36 (250) or Grade 50W (345W) steel for all steel retainer rails. Provide rails that meet the following requirements:

- 2¾ inches (70 mm) wide by 3¼ inches (83 mm) high minimum dimensions
- 8.5 lbs/ft (12.6 kg/m) minimum weight

Only steel retainer rails of one-piece construction are permitted. Steel retainer rails consisting of two or more components welded together to obtain their final cross-sectional shape are not permitted.

Provide ½" (13 mm) diameter weep holes in the retainer rails at 2 foot (610 mm) centers to allow bleeding of trapped air and/or water. Do not obstruct the weep holes with falsework.

Use lubricant adhesive conforming to ASTM D4070.

Use a neoprene gland that is an extruded synthetic rubber utilizing virgin polychloroprene as the only polymer. Require the manufacturer to provide Type 4 certification, in accordance with the Standard Specifications, that the gland has been tested for the following properties:

PHYSICAL PROPERTY	TEST METHOD	REQUIREMENTS
Tensile Strength, min., psi (MPa)	ASTM D412	2000 (13.8)
Elongation at break, min., %	ASTM D412	250
Hardness, Type A durometer, points	ASTM D2240 Modified	60 ± 10
Oven aging, 70h @ 212°F (100°C) Tensile strength, % change max. Elongation, % change max. Hardness, points change, max.	ASTM D573	-20 -20 0 to +10
Oil Swell, ASTM Oil No. 3, 70h @ 212°F (100°C) Weight change, max. %	ASTM D471	45

Ozone resistance 20% strain, 300 pphm in air 70h @ 104°F (40°C)	ASTM D1149 Modified	No cracks
Low temperature stiffening, 7 days @ 14°F (-10°C) Hardness, Type A durometer, points change	ASTM D2240	0 to +15
Compression Set, 70h @ 212°F (100°C) max.	ASTM D395 Method B (modified)	40%

Use one continuous neoprene gland for the entire length of the joint. Only vulcanized shop splicing of the gland is permitted. Field splicing of the neoprene gland is not permitted.

3.0 SHOP DRAWINGS

Submit nine sets of working drawings to the Engineer for review, comments and acceptance. Have someone other than the one who prepares the drawings check all detailed drawings and include the signatures of both the drafter and checker on each sheet of the drawings. The Engineer returns unchecked drawings to the Contractor. Provide all completed drawings well in advance of the scheduled installation time for the strip seal expansion joint.

Show all dimensions, stud anchor locations, welded splice details, splice locations and any other data necessary to fabricate the joint on the shop drawings. Draw all details to scale. Identify, in detail, welding procedures to be performed in fabricating the joint. As a minimum, also show the following on the drawings:

- The method of supporting retainer rails horizontally and vertically during joint installation and placement of concrete to ensure stability and proper alignment. Place supports near field splices of retainer rails to ensure that splices are straight and even.
- A section detail through the joint showing horizontal offset dimensions of the rails from the centerline joint. This detail is required when the vertical face of the joint opening is not perpendicular to the roadway surface (e.g. when the roadway grade is significant).
- Details of the shipping device for retainer rails.

4.0 SHIPMENT

Bolt the steel retainer rails together in the shop to form matching pairs. Clearly mark each pair to identify where they are to be placed. Ship the neoprene gland concurrently with the steel retainer rails and clearly mark them to identify where they are to be placed.

5.0 INSTALLATION

Follow the manufacturer's recommended installation procedures. Have a manufacturer's representative present during installation of the joint.

6.0 INSPECTION

When concrete is cast, use a non-aluminum, 10 foot (3 m), true to line straight edge to check and grade the top of the slab on each side of the joint to ensure smooth transition between spans.

The Engineer inspects the joint system for proper alignment and proper stud placement and attachment. If any aspect of the strip seal expansion joint is deemed unacceptable, make the necessary corrections.

Watertight Integrity Test

- Upon completion of each strip seal expansion joint, perform a water test on the top surface to detect any leakage. Cover the roadway section of the joint from curb to curb, or barrier rail to barrier rail, with water, either ponded or flowing, not less than 1 inch (25 mm) above the roadway surface at all points. Block sidewalk sections and secure an unnozzled water hose delivering approximately 1 gallon (3.8 liters) of water per minute to the inside face of the bridge railing, trained in a downward position about 6 inches (150 mm) above the sidewalk, such that there is continuous flow of water across the sidewalk and down the curb face of the joint.
- Maintain the ponding or flowing of water on the roadway and continuous flow across sidewalks and curbs for a period of 5 hours. At the conclusion of the test, the underside of the joint is closely examined for leakage. The strip seal expansion joint is considered watertight if no obvious wetness is visible on the Engineer's finger after touching a number of underdeck areas. Damp concrete that does not impart wetness to the finger is not considered a sign of leakage.
- If the joint system leaks, locate the place(s) of leakage and take any repair measures necessary to stop the leakage at no additional cost to the Department. Use repair measures recommended by the manufacturer and approved by the Engineer prior to beginning corrective work.
- If measures to eliminate leakage are taken, perform a subsequent water integrity test subject to the same conditions as the original test. Subsequent tests carry the same responsibility as the original test and are performed at no additional cost to the Department.

7.0 BASIS OF PAYMENT

Basis of payment for all strip seals will be at the lump sum contract price for "Strip Seals" which price and payment will be full compensation for furnishing all material, including any steel accessory plates for sidewalks, medians and rails, labor, tools, and incidentals necessary for installing the strip seal in place and including all materials, labor, tools and incidentals for performing the original watertight integrity test.